

INDUSTRY OVERVIEW

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ANALYSIS OF CELLULAR IOT CHIP MARKET

Overview of Cellular IoT Chip Market

Mobile networks are undergoing a profound transformation, evolving from traditional connectivity platforms into a unified infrastructure capable of seamless integration of sensing, computation, and intelligence. This shift is paving the way for an era of hyper-connectivity and intelligent interaction, reshaping industries and human experiences. In 2022, the total number of cellular IoT terminal users of China’s three major telecom operators reached 1.9 billion, surpassing the total number of mobile phone users of 1.7 billion for the first time. This marked the first time that the scale of the terminal network for “things” exceeded that of “people”. Subsequently, China’s cellular IoT user base continued to grow rapidly, reaching 2.9 billion in 2025, maintaining its position as the world’s largest IoT connection market.

Looking ahead to 2035, networks are expected to achieve unprecedented performance: supporting 10 million connections per square kilometer, reducing latency to below 100 microseconds, and delivering monthly average data usage of 1TB per user. Furthermore, the integration of terrestrial and satellite networks will deepen across architecture, protocols, and device testing, accelerating direct satellite-to-phone services and enabling seamless global coverage. This will foster innovative satellite-based service models and facilitate a truly interconnected, intelligent world.

Amid the rapid development of physical AI, cellular IoT chips are becoming a key infrastructure for achieving intelligence. Cellular IoT communications provide distributed intelligent terminals with highly reliable network access in all scenarios. Through integrated ground-ground networking technology, a seamless neural network is built for physical AI systems. Its low power consumption, high reliability, and strong real-time characteristics are expected to become a key enabling technology for the “intelligent connectivity” of all things.

Cellular IoT chips are application-specific integrated circuits designed based on cellular mobile communication technology (2G/3G/4G/5G) standards. They primarily enable wireless connectivity for IoT devices. Based on technical characteristics and application scenarios, cellular IoT chips can be categorized as low-speed, medium-speed, high-speed, and ultra-high-speed. Low-speed chips are exemplified by NB-IoT and IoT NTN, while medium-speed chips primarily include Cat.1bis (includes Cat.1bis and Cat.1), 5G enhanced Reduced Capacity (“**5G eRedCap**”) and NR NTN. High-speed chips include Cat.4 and 5G Redcap, and ultra-high-speed chips are exemplified by 5G eMBB.

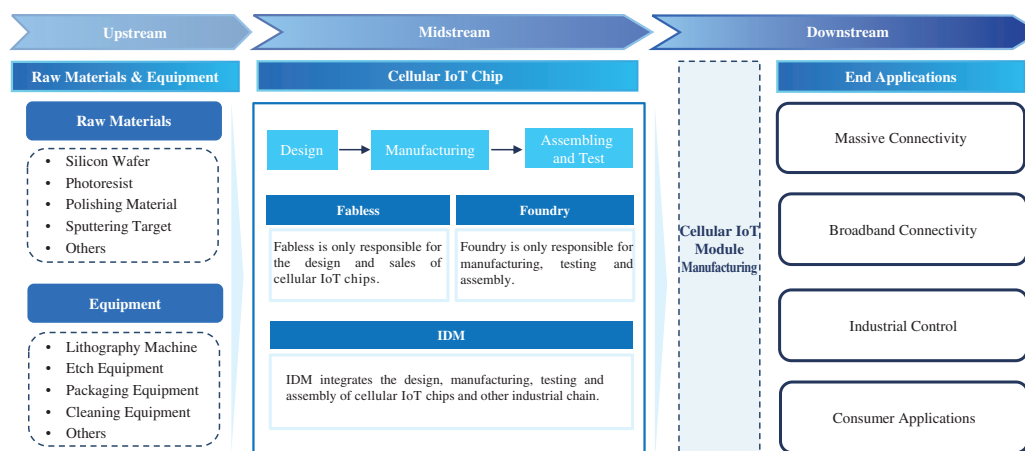
INDUSTRY OVERVIEW

Value Chain of Cellular IoT Chip Industry

The upstream of the cellular IoT chip industry chain consists of the core component supply segment, mainly including raw materials and equipment. The cellular IoT chip companies in the midstream of the value chain are responsible for designing, manufacturing, testing, and assembling of the cellular IoT chips. The Company is in the midstream of the cellular IoT chip Industry value chain. Currently, chip companies in the midstream of the industry chain are mainly operating under the fabless and foundry models. The downstream covers cellular IoT module products manufacturing with a high concentration of module manufacturers, and can be used in a wide range of application scenarios, including massive connectivity, broadband connectivity, industrial control, consumer applications, etc.

The semiconductor industry comprises mainly three business models, namely fabless, foundry and IDM. Fabless companies focus solely on chip design, without owning or operating wafer fabrication facilities. They outsource wafer manufacturing to independent foundries and entrust packaging and testing services to professional outsourced semiconductor assembly and test vendors. Foundry refers to specialized wafer manufacturing service providers which offer wafer fabrication and process technology services to fabless enterprises and IDM players, while engaging in no independent chip design or branded chip sales. IDM (Integrated Device Manufacturer) players adopt a vertically integrated model, covering the whole industrial chain including chip design, wafer manufacturing, packaging, testing and product sales in-house. To sum up, fabless companies conduct chip design, foundries provide wafer manufacturing services, and IDM enterprises integrate design, manufacturing and downstream businesses within one group.

Value Chain of Cellular IoT Chip Market



Source: Frost & Sullivan

INDUSTRY OVERVIEW

Comparisons among Major Technology Routes of Cellular IoT Chip

Cellular IoT chips can be categorized into different technology routes. Each technology route exhibits distinct characteristics and plays a pivotal role in various applications with different features and advantages. 2G/3G have low speeds and high power consumption and are gradually being phased out. 4G technology is the cornerstone of current large-scale applications, mature in technology and with a well-developed ecosystem. 5G is the core direction for future evolution and will gradually become mainstream in medium- and high-speed scenarios. Satellite technology complements terrestrial networks, addressing coverage issues in oceans, deserts, and wilderness areas without ground networks. The features and applications of the major technology routes of cellular IoT chips are compared as follows:

Comparisons among Major Technology Routes of Cellular IoT Chip

	4G Technology			5G Technology			Satellite Technology	
	NB-IoT	Cat.1bis	Cat.4	5G RedCap	5G eMBB	5G eRedcap	IoT NTN	NR NTN
Bandwidth (Hz)	180K	20M	20M	20M	100M	5-20M	180K	Around 10M
Download Peak Data Rate (bps)	127K	10M	150M	220M	20G	10M	Around 100 K	Around 10M
Upload Peak Data Rate (bps)	159K	5M	50M	120M	10G	10M	Around 100 K	Around 10M
Power Consumption	Low	Low	Medium	Relatively Low	High	Relatively Low	Low	Relatively High
Cost	Low	Relatively Low	Medium	Relatively High	High	Medium	Relatively Low	High
Main Characteristics	Wide coverage, large-scale connections	Balanced performance	Higher data rate	Reduced complexity, cost	Ultra-high data rate	Lower bandwidth, cost-effective	Global coverage, no blind zones	Global coverage, high-speed
Application Scenario Examples	Smart meter, asset tracking, environmental monitoring	Industrial IoT, shared mobility, mobile payment terminals	Video surveillance, high-speed mobile	Industrial sensing, smart grid, internet of vehicles	Virtual reality, high-definition video, cloud PC	Simple IoT devices, low-data apps, smart wearables	Asset tracking, logistics monitoring, emergency communications	Aviation Internet, maritime broadband, future vehicle networking

Source: Frost & Sullivan

Downstream Application of Cellular IoT Chip

- Massive Connectivity:** This scenario is characterized by the need to support an extremely high density of connected devices, such as smart meters, trackers, and mobile payment terminals. The primary requirement for chips in this domain is ultra-low power consumption to ensure long device lifetimes, coupled with the ability to efficiently manage a vast number of simultaneous, low-data-rate connections. Reliability and cost-effectiveness are also critical drivers for adoption in these large-scale deployments. AI is increasingly used for network optimization and predictive maintenance, helping telecoms and utilities detect anomalies and predict equipment failures.
- Broadband Connectivity:** This scenario demands chips be capable of supporting applications that require high data throughput and reliable, continuous communication, including Customer Premise Equipment for providing mobile internet access, high-definition video surveillance cameras, AR and VR headsets, and in-vehicle infotainment systems. The chips for these applications prioritize high-speed data transmission, low latency, and stable performance to ensure a high-quality user experience, especially in mobile environments. AI-enhanced video analytics and on-device inference enable real-time object recognition, adaptive bandwidth control, and “intelligent connectivity”.
- Industrial Control:** Targeting mission-critical and harsh operational environments, this scenario requires chips with high reliability, robustness, and strong interference resistance. Applications span smart grid systems for energy distribution, autonomous robots, intelligent equipment monitoring, and the emerging low-altitude economy. The chips must be designed to offer precise

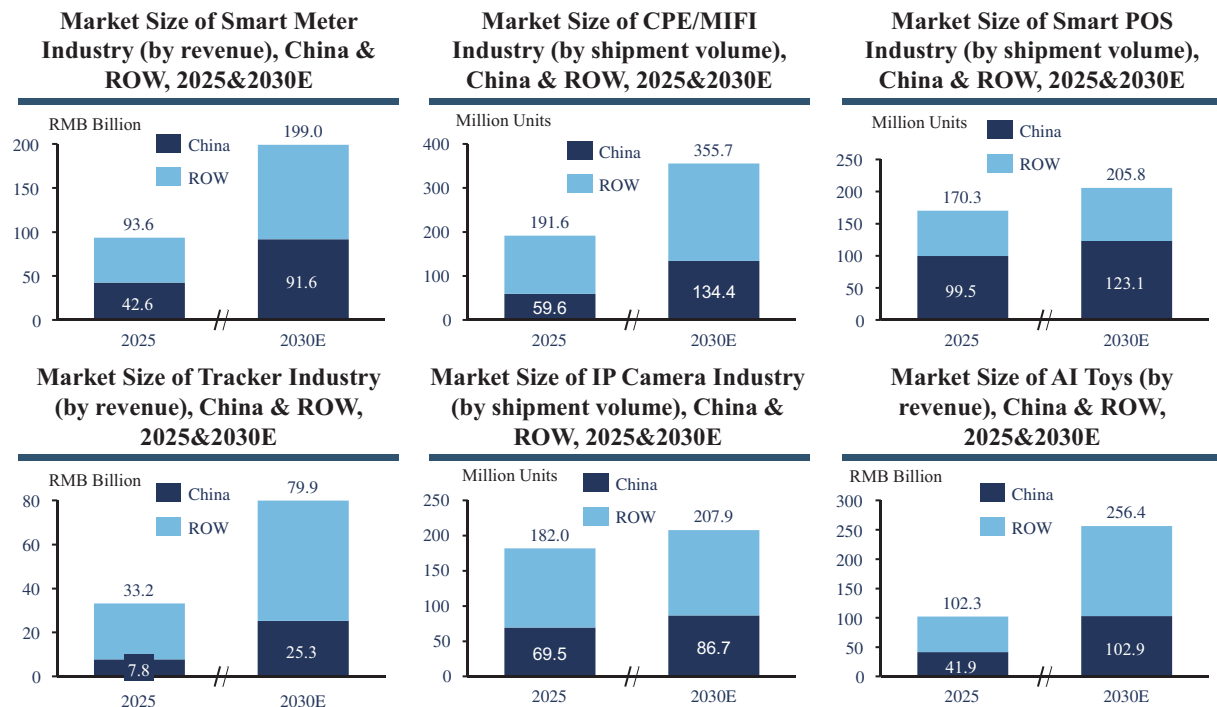
INDUSTRY OVERVIEW

control, very low latency for real-time operations, and the durability to operate in remote or challenging conditions. AI-enabled predictive control and fault diagnosis are becoming essential in industrial IoT environments. For instance, AI models embedded in control chips can detect early-stage anomalies in manufacturing lines, optimize energy usage in factories, and support autonomous decision-making for industrial robots.

- Consumer Applications:** This scenario encompasses a wide range of personal and home devices that leverage cellular connectivity for enhanced functionality and convenience, including smart wearables, AI toys, PC/tablets, and health monitoring devices. Chips for these applications need to strike a balance between performance and ultra-low power consumption to ensure extended battery life. Furthermore, miniaturization and cost are significant factors for widespread adoption in the competitive consumer market. AI-integrated IoT chips enable local inference to enhance privacy and responsiveness without relying on cloud processing.

The following figure shows the market size of key downstream industries for cellular IoT chip:

Market Size of Key Downstream Industries for Cellular IoT Chip



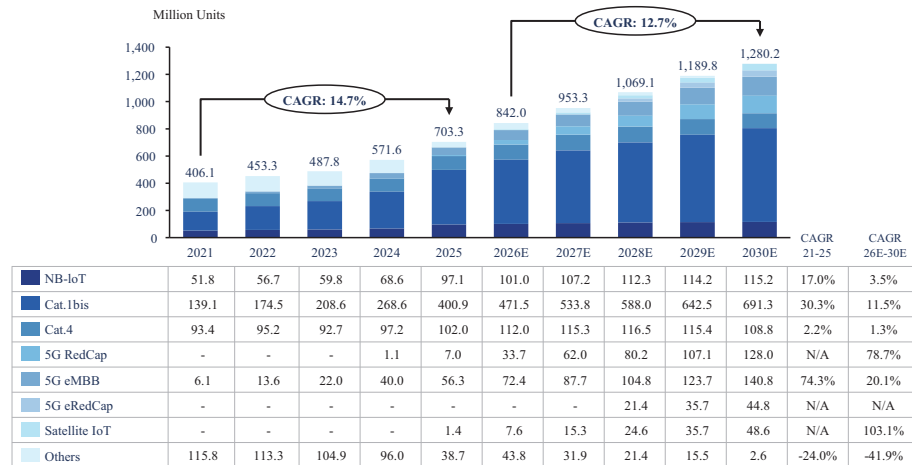
Source: Ministry of Industry and Information Technology, Frost & Sullivan

Market Size of Cellular IoT Chip Market

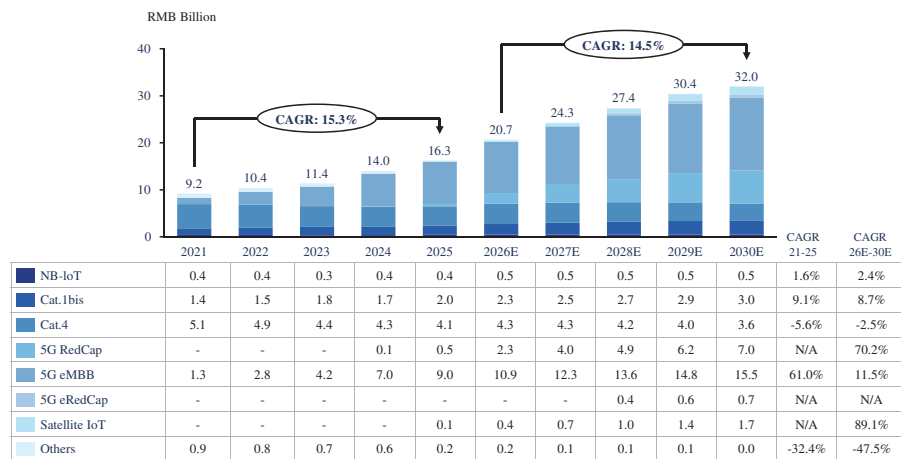
The global cellular IoT chip market exhibited high growth, the shipment volume of cellular IoT chip expanded from 406.1 million in 2021 to 703.3 million in 2025, achieving a CAGR of 14.7%. As downstream application scenarios and market demand continue to expand, the market is projected to accelerate further, reaching 1,280.2 million by 2030 with a CAGR of 12.7% from 842.0 million in 2026.

INDUSTRY OVERVIEW

**Market Size of Cellular IoT Chip (by shipment volume),
Global, 2021-2030E**



**Market Size of Cellular IoT Chip (by revenue),
Global, 2021-2030E**



Source: Frost & Sullivan

- NB-IoT.** NB-IoT chip has maintained strong momentum, the shipment volume of NB-IoT chips expanded from 51.8 million in 2021 to RMB97.1 million in 2025, reflecting a CAGR of 17.0%. Growth is supported by demand from smart meters, basement sensors, and rural deployments. The sector is projected to reach 115.2 million by 2030, with a CAGR of 3.5% from 2026.
- Cat.1bis.** Cat.1bis chip remained the largest market proportion among the cellular IoT chip market, supported by well established LTE infrastructure and characterized by widespread adoption across large scale industrial and consumer applications. Its shipment volume grew from 139.1 million in 2021 to 400.9 million in 2025 with a CAGR of 30.3%, and is projected to reach 691.3 million by 2030 with a CAGR of 11.5%.

INDUSTRY OVERVIEW

- **Cat.4.** Cat.4 demonstrated steady growth, with shipment volume expanded from 93.4 million in 2021 to RMB102.0 million in 2025 with a CAGR of 2.2%, supported by demand for consumer hotspots, home gateways, and connected vehicles. This sector is forecasted to increase to 108.8 million by 2030 with a moderate CAGR of 1.3% from 2026 to 2030, due to the technology substitution.
- **5G RedCap.** 5G RedCap emerged as a high-growth sector underpinned by a broad spectrum of industrial applications, with the power sector in particular demonstrating large scale commercial deployment. The shipment volume of 5G RedCap chips is 7.0 million in 2025, and is projected to grow to 128.0 million by 2030 with a CAGR of 78.7% from 2026 to 2030. The growth is mainly driven by the ongoing advancement of smart manufacturing, vehicular networking, and diversified intelligent terminals.
- **5G eMBB.** 5G eMBB showed robust growth, fueled by the need for CPE, in vehicle systems, and PCs/tablets. The shipment volume of 5G eMBB chips expanded from 6.1 million in 2021 to RMB56.3 million in 2025 with a CAGR of 74.3%. By 2030, this sector is projected to reach 140.8 million with a CAGR of 20.1% from 2026, attributable to the industry’s significant transition from traditional PCs to AI enabled PCs.
- **5G eRedCap.** 5G eRedCap, as a further enhancement of 5G RedCap technology, aims to further reduce terminal complexity and cost. This positions it squarely for the low- and medium-speed IoT markets, which are more sensitive to cost and power consumption, and is possibly to expand in scale during the forecast period. The shipment volume of 5G eRedCap chips is expected to increase to 44.8 million in 2030.
- **Satellite IoT.** The satellite IoT market is projected to expand as universal connectivity demands, 5G standard integration, and broad application needs across transportation, industrial IoT, and public safety accelerate adoption. Large scale satellite constellations, ecosystem partnerships, and falling technology costs further position satellite IoT as a core element of future communication networks. The shipment volume of satellite IoT chips is expected to increase from 7.6 million in 2026 to 48.6 million in 2030, with a CAGR of 103.1%.

Market Drivers of Cellular IoT Chip Market

- **Expanding Application Scenarios.** The market demand for cellular IoT chips stems from the continuous expansion in both the breadth and depth of their application scenarios. The wave of digital transformation across various industries has catalyzed a widespread need for device connectivity and data interaction. An unprecedented number of devices are being integrated into the IoT ecosystem. This vision of interconnected everything is gradually becoming a reality, with each new domain of penetration and each deepening of existing scenarios directly translating into stable and diverse demand for the core connectivity component constituting the cornerstone of market development. Driven by advancements in connectivity standards like 5G RedCap and emerging technologies such as ambient energy harvesting, cellular IoT chip is rapidly expanding beyond traditional domains into emerging areas such as passive IoT, low-altitude economy, AI-Integrated edge devices, smart healthcare, etc.
- **Advancement in Chip Technology and Manufacturing Processes.** The continuous innovation in chip design and manufacturing technology serves as the intrinsic core driving force for industry development. Advanced process technology and architectural design enable breakthroughs in computational capabilities, integration density, and functional complexity, while significantly optimizing power consumption characteristics and physical dimensions. Such advancements empower end devices with enhanced connectivity performance, extended battery life, and more compact form factors, thereby meeting increasingly diverse and demanding application

INDUSTRY OVERVIEW

requirements. Technological iteration not only catalyzes new application possibilities but also propels the entire industry toward higher performance, lower power consumption, and greater cost-effectiveness.

- ***Government Policy Support and Implementation of Industry Mandatory Standards.*** Government policies at all levels provide clear guidance and support for the development of IoT technology, while the formulation and implementation of mandatory industry standards directly regulate and promote the adoption of IoT technologies in specific sectors. China’s Ministry of Industry and Information Technology (MIIT) released the “Notice on Promoting the Intelligent Connectivity of Everything Development of Mobile Internet of Things” in 2024, which sets ambitious goals for the mobile IoT ecosystem by 2027, including exceeding 3.6 billion mobile IoT terminal connections. The U.S. Federal Communications Commission has resumed its authority to auction mid- and low-band spectrum, providing more spectrum resources for the expansion and optimization of 5G networks, which is particularly important for RedCap devices that require reliable connectivity. Besides, Spain’s Royal Decree 159/2021 introduces innovative technical requirements for V16 emergency warning lights, mandating that they integrate NB-IoT-based positioning and emergency call functions. Such top-level planning and regulatory frameworks establish stable, long-term policy expectations for the technological R&D, industrial investment, and market application of cellular IoT chips, serving as a crucial safeguard and driving force for market development.

Development Trends of Cellular IoT Chip Market

- ***Strong Demand for Low Power Consumption Chips.*** The IoT market is demonstrating a broad and sustained demand for highly integrated and low power consumption chips, driven by the rapid expansion of connected devices and the need for long battery life, compact form factors, and efficient communication. These chips serve as the foundation for diverse application scenarios that require stable connectivity and energy-optimized operation. Meanwhile, the accelerating adoption of Edge-AI applications, such as intelligent sensors, smart cameras, and wearable terminals, is further reinforcing this demand. To enable real-time analytics and localized decision-making, these devices increasingly rely on compact AI computing modules embedded within cellular IoT chips, achieving on-device processing, enhanced energy efficiency, and reduced network latency across a wide range of smart-device environments.
- ***Rapid Penetration of 5G RedCap/eRedCap.*** To bridge the technical gap between high performance and low cost, 5G RedCap and its enhanced version have emerged and are accelerating their commercialization process. This technology aims to achieve the optimal balance of performance, power consumption, and cost through a streamlined architecture, thereby extending the advantages of 5G to a broader range of mid-tier IoT application domains. Industry applications are the main force in RedCap shipment, such as power, industrial wireless sensors, video surveillance, wearable devices, etc. Among them, the power industry is taking the lead in achieving large-scale shipments. Because 5G NR terminal capability is oversupply to the power communication network business, the lightweight 5G RedCap has become a key technical carrier for operators and communication equipment manufacturers to promote the intelligent construction of power grids. 5G RedCap intelligently fills the application gap between basic 4G and full-capacity 5G, providing the efficient and cost-optimized solution for IoT technology iteration. The rapid penetration and large-scale application of 5G RedCap indicate that the market is about to usher in a wave of large-scale device upgrades and replacements driven by technological innovation, injecting new growth momentum into the entire industry.
- ***Edge-AI Driving Product Upgrade.*** The migration of artificial intelligence applications from the cloud to the network edge is imposing direct requirements on the localized intelligent processing capabilities of terminal devices. This trend is driving cellular IoT chips to evolve beyond their traditional singular function of connectivity towards System-on-Chip architectures that integrate

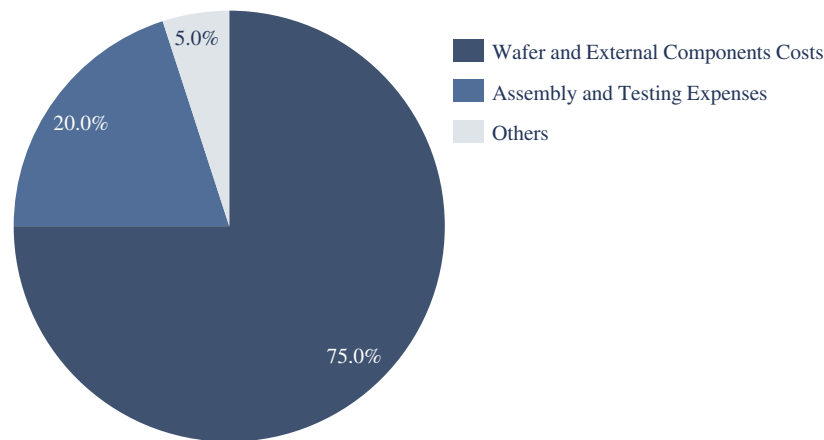
INDUSTRY OVERVIEW

artificial intelligence processing capabilities. Future chips will need to maintain low-power connectivity while possessing enhanced capabilities for local data perception, computation, and decision-making, thereby meeting the demands of intelligent applications that require high real-time performance and strong privacy security, ultimately guiding products towards upgrades in higher value tiers. Specifically, AI-driven edge applications such as smart vision sensors, intelligent metering, industrial inspection, and predictive maintenance are witnessing rapid adoption. The market for AIoT edge chips used in smart cameras, autonomous robots, and wearable health devices is expected to maintain double-digit annual growth during the forecast period, becoming a key catalyst for next-generation cellular IoT development.

Cost Structure of Cellular IoT Chip Market

The cost structure of cellular IoT chip mainly include wafer and external components costs as well as assembly and testing expenses. For fabless companies, the cost of procuring wafers from foundries constitutes the largest portion of the overall expenses. Wafer and external components costs account for approximately 75% of total cellular IoT chip cost in 2025. The remaining assembly and testing expenses account for about 20% of total cost of cellular IoT chip in 2025.

Cost Structure of Cellular IoT Chip Market, Global, 2025



Source: Frost & Sullivan

COMPETITIVE ANALYSIS OF CELLULAR IOT CHIP MARKET

Competitive Landscape of Cellular IoT Chip Market

The global cellular IoT chip market is characterized by intense competition, rapid growth, and a high degree of concentration, with dozens of players while only a limited number of major players dominating the industry landscape. This competitive landscape is shaped by technological innovation, cost competitiveness, and strategic focus on emerging applications across diverse global markets.

Chinese players have rapidly gained significant market share. Their core strengths include exceptional cost-performance ratio, aggressive time-to-market, and deep integration within the local supply chain and ecosystem. Chinese players excel in popular segments such as 4G Cat.1bis and NB-IoT, catering to massive IoT deployments such as smart meters, POS, and asset tracking as well as emerging AI-related applications.

INDUSTRY OVERVIEW

The competitive landscape of China’s cellular IoT chip market is characterized by a high degree of concentration and rapid technological evolution, shaped by a push for both cost leadership and indigenous innovation, with dozens of players in the market. The market is dominated by a handful of domestic players with full-mode baseband capabilities, who compete with entrenched international players for market share.

Ranking of Cellular IoT Chip Companies

In 2025, the total shipment volume of cellular IoT chips globally was 703.3 million units. The Company’s global cellular IoT chips shipment volume reached 143.8 million units, accounting for 20.4% of the global cellular IoT chip market by shipment volume, ranking as the second largest player globally. The market size of global cellular IoT chip industry reached RMB16,251.3 million by revenue in 2025. The Company’s revenue from cellular IoT chips was RMB629.5 million in 2025, accounting for 3.9% of the global cellular IoT chip market by revenue.

Since the downstream applications of cellular IoT chips are broad and diversified covering various speed products, the average price and profit margins of different cellular IoT chips products can vary significantly, and the high-speed products such as LTE Cat4, 5G Redcap and 5G eMBB with higher added value is expected to contribute to higher product average price and profit margins. The Company’s products mainly focus on low and mid-speed cellular IoT chips with lower average price than high-speed products in 2025, and therefore the market share in terms of revenue of the Company is lower compared with the market share in terms of the shipment volume.

Ranking of Providers of Cellular IoT Chips (by shipment volume), Global, 2025				Ranking of Providers of Cellular IoT Chips (by revenue), Global, 2025			
Rank	Company Name	Shipment Volume (million units)	Market Share	Rank	Company Name	Revenue (RMB million)	Market Share
1	Company B	216.0	30.7%	1	Company A	5,516.0	33.9%
2	The Company	143.8	20.4%	2	Company B	1,517.7	9.3%
3	Company C	84.1	12.0%	3	The Company	629.5	3.9%
4	Company D	63.0	9.0%	4	Company C	597.3	3.7%
5	Company A	62.1	8.8%	5	Company D	298.1	1.8%
	Others	134.4	19.1%		Others	7,692.6	47.3%
	Total	703.3	100.0%		Total	16,251.3	100.0%

Source: Company’s Annual Reports, Frost & Sullivan

Notes:

Company A is a company headquartered in California, USA and listed on the Nasdaq, was established in 1985 and primarily offers wireless communication technologies and SoC products, including Snapdragon processors, baseband chips, and patent licensing for global telecom standards.

Company B is a company headquartered in Shanghai, China and listed on the Shanghai Stock Exchange, was established in 2015 and primarily offers wireless communication and large-scale SoC chipsets, baseband chips, non-cellular IoT solutions, and semiconductor IP licensing services.

INDUSTRY OVERVIEW

Company C is a company headquartered in Shanghai, China, was established in 2001 and primarily offers fabless semiconductor chipsets for mobile devices and IoT applications, including multi-standard wireless communication SoCs.

Company D is a company headquartered in Shanghai, China, was established in 2017 and primarily provides AIoT cellular IoT SoC solutions such as NB-IoT, Cat.1 bis, and GNSS chips for smart devices and IoT applications.

Ranking of NB-IoT Chip Companies

In 2025, the total shipment volume of NB-IoT chips globally was 97.1 million units, accounting for approximately 14% of the global cellular IoT chip market. The Company’s global NB-IoT chips shipment volume reached 39.0 million units, accounting for 40.2% of the global NB-IoT chip market by shipment volume, ranking as the second largest player globally. Other major NB-IoT chip companies include Company D, Company E, Company C, and Company A.

The market size of global NB-IoT chip industry reached RMB442.0 million in 2025, accounting for approximately 3% of the global cellular IoT chip market. The Company’s revenue from NB-IoT chips was RMB161.4 million in 2025, accounting for 36.5% of the global NB-IoT chip market by revenue.

Ranking of Providers of NB-IoT Chips (by shipment volume), Global, 2025				Ranking of Providers of NB-IoT Chips (by revenue), Global, 2025			
Rank	Company Name	Shipment Volume (million units)	Market Share	Rank	Company Name	Revenue (RMB million)	Market Share
1	Company D	41.0	42.3%	1	Company D	181.8	41.1%
2	The Company	39.0	40.2%	2	The Company	161.4	36.5%
3	Company E	7.9	8.2%	3	Company E	37.7	8.5%
4	Company C	5.9	6.0%	4	Company C	27.9	6.3%
5	Company A	0.9	0.9%	5	Company A	8.0	1.8%
	Others	2.3	2.4%		Others	25.2	5.7%
	Total	97.1	100.0%		Total	442.0	100.0%

Source: Company’s Annual Reports, Frost & Sullivan

Note:

Company E is a company headquartered in Shenzhen, China, was established in 2004 and primarily offers fabless semiconductor design solutions, including SoCs for mobile devices, wireless communications, video processing, and AI applications.

Ranking of Cat.1bis Chip Companies

In 2025, the total shipment volume of Cat.1bis chips globally was 400.9 million units, accounting for approximately 57% of the global cellular IoT chip market. The Company’s global Cat.1bis chips shipment volume reached 104.8 million units, accounting for 26.1% of the global Cat.1bis chip market by shipment volume, ranking as the second largest player globally. Other major Cat.1bis chip companies include Company B, Company C, Company D, and Company F.

INDUSTRY OVERVIEW

The market size of global Cat.1bis chip industry reached RMB1,971.2 million in 2025, accounting for over 12% of the global cellular IoT chip market. The Company’s revenue from Cat.1bis chips was RMB468.1 million in 2025, accounting for 23.7% of the global Cat.1bis chip market by revenue.

Ranking of Providers of Cat.1bis Chips (by shipment volume), Global, 2025				Ranking of Providers of Cat.1bis Chips (by revenue), Global, 2025			
Rank	Company Name	Shipment Volume (million units)	Market Share	Rank	Company Name	Revenue (RMB million)	Market Share
1	Company B	180.9	45.1%	1	Company B	921.3	46.7%
2	The Company	104.8	26.1%	2	The Company	468.1	23.7%
3	Company C	67.0	16.7%	3	Company C	344.1	17.5%
4	Company D	14.2	3.5%	4	Company D	69.8	3.5%
5	Company F	3.6	0.9%	5	Company F	17.5	0.9%
Others		30.4	7.6%	Others		150.4	7.6%
Total		400.9	100.0%	Total		1,971.2	100.0%

Source: Company’s Annual Reports, Frost & Sullivan

Note:

Company F is a company headquartered in Shenzhen, China, was established in 2021 and primarily offers mobile communication intelligent SoC chip products, including integrated AIoT Cat.1bis baseband-RF SoCs, focusing on applications for cellular IoT, mobile devices, and smart connected vehicles.

The table below summarizes the comparison between the Company and other industry major players in terms of their market position, cellular IoT chip technology routes, as well as product application scenarios.

Company	The Company	Company A	Company B	Company C	Company D	Company E	Company F
Market Position	Ranked the 3 rd among global cellular IoT chip providers by revenue in 2025	Ranked the 1 st among global cellular IoT chip providers by revenue in 2025	Ranked the 2 nd among global cellular IoT chip providers by revenue in 2025	Ranked the 4 th among global cellular IoT chip providers by revenue in 2025	Ranked the 5 th among global cellular IoT chip providers by revenue in 2025	Ranked the 3 rd among global NB-IoT chip providers by revenue in 2025	Ranked the 5 th among global cellular IoT chip providers by revenue in 2025
Cellular IoT Chip Technology Routes	NB-IoT, Cat.1bis, etc., covering low to medium speed	NB-IoT, Cat.1bis, Cat.4, Cat.6, 5G RedCap,5G eMBB, etc., covering low to high speed	Cat.1, Cat.4, Cat.7, 5G RedCap, etc., covering medium to high speed	NB-IoT, Cat.1bis,Cat.4, Cat.6, 5GRedCap, etc., covering low to high speed	NB-IoT, Cat.1bis, etc., covering low to medium speed	NB-IoT, Cat.1bis, Cat.4, 5G RedCap, etc., covering low to high speed	Cat.1bis etc., covering medium speed
Application Scenarios	Smart meters, Alarming, trackers, mobile payment, IP Camera, AI devices, wearables, etc.	Industrial IoT, utility grids, automobiles, industrial control, etc.	Industrial IoT, mobile payment, wearables, industrial control, etc.	Industrial IoT, smart meters, logistics, mobile payment, wearables, etc.	Smart meters, asset tracking, POS, mobile payment, etc.	Mobile payment, wearables, industrial control, smart meters, etc.	Wearables, mobile payment, asset tracking, industrial control, etc.

Source: Frost & Sullivan

INDUSTRY OVERVIEW

Entry Barriers of Cellular IoT Chip Market

- **Technology Barrier:** The development of cellular IoT chips involves significant technological complexity, requiring deep expertise in cellular standards, such as NB-IoT, LTE, and 5G RedCap, low-power design, and integration of radio frequency (RF) and baseband functionalities. Achieving high reliability, ultra-low power consumption, and cost-effectiveness simultaneously demands prolonged R&D investment and iterative optimization. Start-ups and new entrants often struggle to master these core technologies, facing challenges in performance stability and compatibility, which creates a high barrier to innovation and market entry.
- **Customer and Operator Certification Barrier:** Cellular IoT chips must undergo rigorous certification processes from mobile operators and meet industry-specific standards. These certifications are time-consuming, costly, and require extensive field testing to ensure interoperability as well as network compatibility. Additionally, downstream customers, including module makers and OEMs, often require long-term validation for stability and durability. The lack of certification can severely limit market access, making it difficult for new players to gain trust and adoption.
- **Industry Chain Barrier:** Established chip companies benefit from mature supply chain relationships with foundries, assembling and test services, and module manufacturers, enabling cost control and stable production capacity. New entrants, however, face challenges in securing competitive wafer allocation, advanced process access, and economies of scale. Moreover, tight collaboration with module makers and OEMs is essential for design-in and market penetration, which requires time and proven performance to build, creating a high barrier to ecosystem integration.
- **Talent Barrier:** The design of cellular IoT chips requires highly specialized talent with expertise in communication protocols, analog circuit design, low-power optimization, system architecture, etc. Such professionals are scarce and often concentrated in leading semiconductor companies. Recruiting and retaining experienced teams demands significant financial resources and competitive incentives. For new entrants, building a capable team from scratch is both time-consuming and costly, forming a critical barrier to developing competitive products.

SOURCES OF INFORMATION

We engaged Frost & Sullivan, an independent market research consultant, to conduct an analysis of, and to prepare a report on global and China’s cellular IoT chip industry for the use in this Document, which was commissioned by us for a fee of RMB600,000. In compiling and preparing the F&S Report, Frost & Sullivan adopted the following assumptions: (i) the social, economic and political conditions globally currently discussed will remain stable during the forecast period, (ii) global and China’s government policies on cellular IoT chip industry will remain consistent during the forecast period, (iii) global and China’s on cellular IoT chip industry will be driven by the factors which are stated in the report in the forecast period. Except as otherwise noted, all of the data and forecasts contained in this section are derived from the F&S Report. The Frost & Sullivan Report has been prepared by Frost & Sullivan independently without any influence from us or other interested parties.